

# Abstracts from the 2013 Eastern Vascular Society Annual Meeting

## Scientific Session I: Venous/Other

### Limited Venoplasty and Anticoagulation Affords Excellent Long-Term Results after First Rib Resection and Scaleneotomy for Paget-Schroetter Syndrome

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**Objectives:** We have previously demonstrated excellent patency rates following routine venography after first rib resection and scaleneotomy (FRRS) for Paget-Schroetter syndrome. The goal of this study was to assess the long-term outcomes of this technique.

**Methods:** Retrospective analysis of a prospectively collected database was performed. Patients underwent routine venography 2 weeks post-FRRS. Warfarin was discontinued in those with patent veins. Patients with stenotic or occluded veins underwent attempted venoplasty with balloon diameters approximating the size of the anatomically normal vein. Patients with successful venoplasty or chronically occluded veins unable to be dilated were continued on Warfarin up to 6 months. Follow-up duplex ultrasound dictated cessation of anticoagulation. Kaplan-Meier analysis was performed for primary, primary-assisted, and secondary patency.

**Results:** One-hundred fifty-nine patients underwent FRRS and post-operative venography with a median follow-up of 13.8 months. One patient was lost to follow-up. At the time of venography, there were 42 patent, 72 stenotic, and 44 occluded veins. Of the 44 occlusions, 24 underwent venoplasty and 20 could not be crossed. In the entire group, restenosis occurred in seven patients and reocclusion in seven. At last follow-up, six patients remained occluded. Eighteen-month PP of venoplasty was  $95.4 \pm 2.6\%$  in the stenotic group and  $85.9 \pm 7.6\%$  in the occluded group. Eighteen-month primary-assisted patency of venoplasty was  $98.3 \pm 1.7\%$  in the stenotic group and  $96.0 \pm 7.5\%$  in the occluded group. Overall secondary patency at 3 years was 100% in the patent group,  $98.4 \pm 1.6\%$  in the stenotic group, and  $97.4 \pm 2.6\%$  in the occluded group.

**Conclusions:** Long-term venous patency rates after limited venoplasty and anticoagulation following FRRS are excellent. Furthermore, prolonged anticoagulation for occlusions that could not be crossed or in those that reocclude after venoplasty results in recanalization and delayed patency. These results argue against the need for stenting or open venous reconstruction, and serve as a benchmark for the care of patients with Paget-Schroetter syndrome.

### Office-Based Iliac Venogram, IVUS, and Stenting

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**Objectives:** The purpose of this study is to evaluate the safety and efficacy of ambulatory office-based iliac vein venograms that were performed for venous insufficiency.

**Methods:** Procedures were performed under local anesthesia with puncture in the common femoral or femoral vein. Venogram and intravascular ultrasound (IVUS) were performed of the inferior vena cava, iliac, and femoral veins. Areas of 50% diameter or area reduction underwent stenting and balloon angioplasty. Patients were followed with iliac duplex within 2 weeks and every 3 months, and were prescribed plavix to start the day after the procedure. This series included 147 venograms combined with IVUS from July 28, 2012 through November 20, 2012. Routine completion venogram and IVUS were routinely obtained.

**Results:** Patient ages varied from 21 to 91 years old, with mean value of 70 years old, with standard deviation of  $\pm 13.18$  years. Thirty percent of patients underwent bilateral venograms, and 70% patients underwent unilateral venogram based on clinical indications. Patients were classified using clinical classification of chronic lower extremity venous disease C1-C6 with total of C1-0, C2-121, C3-6, C4-0, C5-39, and C6-0. Ninety-one percent of patients underwent stenting consistent with prior series. The most common stents placed were 16 by 90 mm and 14- by 90-mm stents. The average time for a procedure was 33.2 minutes with standard deviation of 8.26 minutes. On subsequent follow-up, three patients had thrombosis of the iliac vein stent requiring inpatient suction thrombectomy and lysis

therapy. No restenosis was noted. No patient was admitted for anesthetic complications, bleeding, or pain control.

**Conclusions:** These data suggest that this procedure can be performed in an ambulatory office setting safely and efficaciously. The need for these procedures to be performed as an inpatient needs to be re-examined.

### Risk Factors for Nonretrieval of Retrieable Inferior Vena Cava Filters

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**Objectives:** Optimal utilization of retrievable inferior vena cava (IVC) filters is an important healthcare issue and despite an exponential rise in the use of retrievable IVC filters, national trends suggest that the majority of these filters are not removed. The purpose of this study was to identify risk factors associated with nonretrieval of retrievable IVC filters at our institution.

**Methods:** A retrospective institutional review of all patients undergoing IVC filter placement from June 2010 to June 2012 was performed. A number of patient parameters were studied, including relevant demographics, indication for filter placement, clinical history, related hospitalization, and whether filter retrieval was performed. Patient parameters were compared by univariate and multivariate logistic regression analysis.

**Results:** 605 (49% male) retrievable IVC filters were placed over a 24-month period by vascular surgery, intervention radiology, and interventional cardiology. One-hundred forty (23%) IVC filters were removed. By indication, 272 (45%), 53 (9%), and 280 (46%) filters were placed for absolute, relative, and prophylactic indications, respectively. By univariate analysis, we examined over 20 patient variables and identified 13 associated with nonretrieval ( $P < .05$ ). Independent predictors for nonretrieval by multivariate analysis were age  $> 80$  (HR, 0.2; 95% CI, 0.05-0.6;  $P = .005$ ), acute bleed (HR, 0.4; 95% CI, 0.2-0.7;  $P = .004$ ), current malignancy (HR, 0.5; 95% CI, 0.3-0.8;  $P = .011$ ), postfilter anticoagulation (HR, 2.0; 95% CI, 1.1-3.6;  $P = .017$ ), and history of pulmonary embolism and venous thromboembolic event (HR, 2.0; 95% CI, 1.2-3.5;  $P = .007$ ). Filter placement team and indication were not identified as independent predictors of nonretrieval of IVC filters.

**Conclusions:** Patient variables identified by univariate and multivariate analysis as risk for nonretrieval of retrievable IVC filters has several implications: (1) some of these patients may represent a high-risk population in which filter retrieval has diminishing returns and may indicate the clinical option for permanence of the filter; and (2) identification of risk factors for nonretrieval in patients before filter placement will help to optimize utilization of retrievable IVC filters and enhance retrieval rates.

### Posterior Tibial Vein Aneurysm Presenting as Tarsal Tunnel Syndrome: Case Report and Review of the Literature

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**Objectives:** To describe the first case of tarsal tunnel syndrome associated with an aneurysm of the posterior tibial vein.

**Methods:** Tarsal tunnel syndrome is a compressive neuropathy of the posterior tibial nerve in the medial aspect of the ankle. The etiology of this pathology is varied and different. It includes space occupying lesions, trauma, inflammation, anatomic deformity, iatrogenic injury, idiopathic, and systemic causes. We performed an extensive literature review and present a case report on tarsal tunnel syndrome from a venous aneurysm which was misdiagnosed as a nerve sheath tumor on magnetic resonance imaging.

**Results:** A 46-year-old male presented to our hospital with chronic history of left foot pain and swelling. Initial imaging with magnetic resonance imaging suggested a nerve sheath tumor; however, subsequent ultrasound revealed this to be a venous aneurysm, measuring  $2.0 \times 0.7 \times 0.7$  cm (posterior venous concomitant) impinging on the posterior tibial nerve, Figs 1 and 2. Through an open approach, we ligated and resected the venous aneurysm (Fig 3) along with lysing the peripheral nerve. At follow-up (1 month), he has had complete resolution of his pain.

**Conclusions:** This case represents the first report of a venous aneurysm resulting in compression of the tibial nerve at the level of the malleolus resulting in pain. Surgical decompression has been curative.